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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/922,059	08/03/2001	Erich James Vorenkamp	10541/562 V200-0618	4056

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EXAMINER

MAYES, MELVIN C

ART UNIT	PAPER NUMBER
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1734

DATE MAILED: 08/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/922,059	Applicant(s) VORENKAMP ET AL. SA	
	Examiner Melvin Curtis Mayes	Art Unit 1734	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 May 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

(1)

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

(2)

Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ekendahl et al. 6,372,176 in view of GB 1,242,509.

Ekendahl et al. disclose a method of twin sheet forming a fuel tank comprising: providing first and second thermoplastic sheets to first and second heating stations, respectively, to heat the first and second sheets; feeding the heated first and second sheets to first and second thermoforming stations for thermoforming the sheets into first and second pieces; and pressing the pieces together to fuse them together to form a fuel tank. The heating stations and thermoforming stations are arranged in-line side by side such that first and second sheets are transferred independently between the stations. The heating stations can include conventional heaters such as infrared radiators or other heating devices capable of heating thermoplastic material. The thermoforming stations each include a thermoforming tool such as a female vacuum mold. Inserts of various kinds, such as baffles, for a fuel tank can be installed and included in the interior region between the thermoformed sheets by placing the insert within the cavity of one thermoformed piece before transferring the piece to the second thermoformed piece to fuse the insert within the cavity of the fuel tank (col. 3-8). Ekendahl et al. do not disclose

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pre-heating pluralities of the sheets including the first and second sheets before providing the first and second sheets to the heating stations.

GB '509 teach that in thermoforming of thermoplastic sheets, a stack of sheets may be heated to a temperature sufficiently below the fusion point to avoid blocking or fusion of one sheet to the next in one heating unit followed by heating of the hottest individual sheet to thermoforming temperatures in a second heating unit. Because most thermoplastic materials have a higher Dissipation Factor at elevated temperatures, the heating time for the preheated sheets can be relatively short compared to passing a stack into the primary heating unit. By controlling the number of sheets in the primary stack, the time to heat the sheets in stacked form can be coordinated with the time to further heat the sheet individually in the second heating unit to prepare the sheet for thermoforming so that semi-continuous operation can be established with maximum production rates (pg. 3, lines 7-32).

It would have been obvious to one of ordinary skill in the art to have modified the method of Ekendahl et al. for twin sheet forming a fuel tank by preheating the first and second sheets as part of a stack before providing the sheets to the first and second heating stations, as taught by GB '509, to reduce heating time compared to heating sheets just in a primary heating unit, the stack of sheets preheated to temperature below the fusion point before heating the hottest individual sheet in a second heating unit for thermoforming temperature. Preheating a stack or stacks of sheets to a first temperature lower than thermoforming temperature to avoid fusion to one another and from which the first and second sheets are removed for loading into the first and second heating stations for heating the sheets to thermoforming temperature for thermoforming would have been

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obvious to one of ordinary skill in the art to reduce heating time and establish semi-continuous operation with maximum production rates, as taught by GB '509. By preheating, the time required to heat the sheets to thermoforming temperature is reduced and is thus lower than the time required for preheating, as claimed in Claim 19.

Preheating the stack or stacks of sheets in a convection oven, as claimed in Claim 2, would have been obvious to one of ordinary skill in the art as a conventional heater capable of heating thermoplastic material.

Replacing sheets in the stack or stacks after preheated first and second sheets have been removed, as claimed in Claims 4 and 13, would have been obvious to one of ordinary skill in the art to control the number of sheets in the stack, as taught by GB '509, so that the time to heat the sheets in stacked form can be coordinated with the time to further heat a sheet individually in the second heating unit to prepare the sheet for thermoforming so that semi-continuous operation can be established with maximum production rates.

(3)

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over the references as applied to claim 1 above, and further in view of Coninck et al. 6,328,842.

Coninck et al. teach that welding hollow plastic articles for making fuel tanks requires local melting of the material at the location of the weld lips followed by pressing. The "weld lips" are the surface of the articles which are brought into contact to weld the articles (col. 1, lines 43-47, col. 4, lines 10-13).

It would have been obvious to one of ordinary skill in the art to have modified the method of the references as combined by fusing a lip formed with the first and second

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sheets, as Coninck et al. teach that in making a fuel tank by welding articles, the articles are welded at "lips" to form the fuel tank.

Response to Arguments

(4)

Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

(5)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melvin Curtis Mayes whose telephone number is 571-272-1234. The examiner can normally be reached on Mon-Fri 7:30 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chris Fiorilla can be reached on 571-272-1187. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you

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have questions on access to the Private PAIR system, contact the Electronic Business

Center (EBC) at 866-217-9197 (toll-free).



Melvin Curtis Mayes
Primary Examiner
Art Unit 1734

MCM

August 13, 2004